Trymalium monospermum (Rhamnaceae), a new species from south-western Australia

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Abstract

Rye, B.L. *Trymalium monospermum* (Rhamnaceae), a new species from south-western Australia. *Nuytsia* 13(2): 339–343 (2000). A description and illustration of *Trymalium monospermum* Rye (Rhamnaceae) are given, together with an updated generic description and key. The new species has a high priority for conservation as it is currently known from only one small population, which is located near Narrogin in the south-west of Western Australia. It is unique in its genus in being completely glabrous and in its 1-seeded trigonous fruit.

Introduction

A newly discovered species of *Trymalium*, known from a single population in south-western Australia, is described and illustrated. It differs from all previously named species of Rhamnaceae from the region in having a uniloculate one-seeded trigonous fruit. There is one undescribed south-western species of *Cryptandra* Sm. with a uniloculate one-seeded fruit, but its fruit differs in being terete.

This paper also gives a full description of the genus *Trymalium*, encompassing the unique features of the new species. The key to Western Australian members of the genus given in (Rye 1996) is revised.

Taxonomy

Trymalium Fenzl (Fenzl 1837: 20). *Type: Trymalium ledifolium* Fenzl., lectotype *fide* Suessenguth (1953: 113).

Plants low shrubs to small trees, the branchlets not spinescent in most taxa; indumentum of simple and/or stellate hairs or absent. *Stipules* free, close and often overlapping at the base on adaxial side of petiole but widely separated on abaxial side. *Leaf blades* either conduplicate in bud or relatively flat and with margins recurved, most taxa with the midvein slightly impressed and the margins recurved at maturity, entire or toothed. *Cymes* terminal and axillary on the branchlets, usually very loose, with

few to many pedicellate flowers, occasionally some cymes reduced to a single flower; pedicels long except in *T. densiflorum*. *Floral tube* entirely adnate to the ovary and disc or almost so, not extended beyond the disc.. *Sepals* 5, prominent and petalline. *Petals* 5, smaller than the sepals, spathulate, with the lamina cupped around an anther in bud. *Disc* prominent, more or less horizontal, thick, formed into an undulate ring at first (with 5 lobes extending outwards between the stamen bases alternating with five lobes extending inwards), becoming broader and more uniformly circular in fruit but with 5 indentations around the outside where the petals and stamens inserted, glabrous in most taxa. *Ovary* (2)3-celled. *Style* with (2)3 stigmatic branches or long lobes, or less prominently 3-lobed. *Fruit* a 3-celled schizocarp in most taxa, either a 2-celled schizocarp or 1-celled in the remaining taxa, about half to fully inferior, enclosed at the base or for its full length in the floral tube, which either splits irregularly from the base upwards to release 1–3 monocarps (fruiting carpels) or forms three regular longitudinal slits to release the monocarps; monocarp(s) coriaceous to crustaceous, entire, indehiscent, with (2)3 surfaces, all surfaces or the inner one(s) brown and minutely to prominently patterned. *Seeds* with a darkened base, the remainder uniformly brown-coloured or with a pale border; aril very reduced to a thin saucer-like structure, hugging the base of the seed but readily detached, entire to distinctly 3-lobed, translucent.

Notes. A genus of 15 species occurring in southern mainland Australia, with 12 species endemic to the south-west of Western Australia, one species endemic to southern South Australia and two species endemic to The Grampians in Victoria.

Revision of key to Western Australian *Trymalium* species

The new species falls into the second main division of the key to Western Australian species given in Rye (1996). This portion of the key covers the taxa with a glabrous ovary and is revised below to include *T. monospermum* and to correct a later reference to the fruit of *T. ledifolium* Fenzl. In the previous key *Trymalium ledifolium* was distinguished from *T. elachophyllum* Rye partly on the basis of its fully inferior fruit, but it was recently observed that half of the few fruiting specimens of *T. ledifolium* var. *ledifolium* do not have fully inferior fruits like the other varieties of this species. One specimen (*E.A. Griffin* 6673) has the fruits varying from about three-quarters to almost half inferior.

1. Ovary (only summit visible) glabrous. Fruit glabrous, partially or fully enclosed in the floral tube, which is usually also glabrous.
   9. Leaves narrowly obcordate to broadly obtriangular, with margins flat or incurved at maturity. Floral tube constricted below apex in fruit and extended slightly above the fully inferior fruit.
      10. Leaves entire, hairy. Fruit terete, 3-seeded ..... **T. urceolare**
      10. Leaves distally toothed, glabrous. Fruit trigonous,1-seeded. ..... **T. monospermum**
   9. Leaves linear to oblong-elliptic, with margins somewhat recurved to revolute at maturity. Floral tube not constricted in fruit and exceeded or equalled in length by the half-inferior to fully inferior fruit.
      11. Leaves 2–5 mm long. Fruit *c.* two-thirds inferior, erect or spreading, regularly dehiscent into three equal parts. Monocarps coriaceous to brittle at maturity; inner surface finely reticulate, not ridged ..... **T. elachophyllum**
      11. Leaves 8–40 mm long. Fruit usually fully inferior (except in *T. ledifolium* var. *ledifolium),* pendulous, irregularly dehiscent. Monocarps very hard at maturity; inner surface prominently ridged, with large deep lacunae ..... **T. ledifolium**

Trymalium monospermum Rye, *sp. nov.*

Plantae omnino glabrae; folia conduplicata, dentata; ovarium uniloculare; fructus trigonus, uniseminalis.

Typus: Narrogin area [precise locality withheld], Western Australia, 15 July 1999, *L.W. Sage*1540, *J.P. Pigott & E.B. Pigott* (*holo:* PERTH 05301661; *iso:* CANB, K, MEL, NY).

Shrubs 0.1–0.3 m high and up to 0.5 m wide, multi-stemmed at base, not spinescent, completely glabrous. *Young stems* with minute tubercles, becoming dark grey. *Stipules* ovate or broadly ovate, 0.7–1 mm long, acute or shortly acuminate, entire or somewhat toothed. *Petiole c.* 0.5 mm long. *Leaf blades* conduplicate or with margins incurved at first, becoming flat or nearly flat, narrowly obcordate to broadly obtriangular, 5–8 x 2–4.5 mm, entire in the basal part and dentate distally, rather prominently 2-lobed at apex with a triangular mucronulate sub-lobe or a point at the junction of the two main lobes, each of the main lobes usually 2–5-denticulate but sometimes just with a single mucronulate tip; upper surface minutely reticulate-pitted; lower surface minutely rugose with furrows and pits. *Flowers* cream or off-white. *Cymes* terminal and axillary on the branchlets, mostly 5–12-flowered, very loose, up to 14 mm long in fruit, not including the peduncle, which is up to *c.* 6 mm long. *Pedicels* 1–1.5 mm long in flower and up to 4 mm long in fruit. *Floral tube c.* 0.5 mm long in flower, enlarging to *c.* 2.6 mm long in fruit and becoming constricted just below the summit which forms a spreading terminal portion *c.* 0.15 mm long. *Sepals c.* 0.8 mm long. *Petals c.* 0.4 mm long. *Disc c.* 0.25 mm wide. *Ovary* 3-celled. *Style c.* 0.2 mm long; apex with a flattened 3-lobed stigma. *Fruit* fully inferior, 1-celled, trigonous, truncate-obovate in outline and 6–7 x 3.5–4 mm including the floral tube and other attached parts, the floral tube splitting irregularly from the base upwards to release the single monocarp; monocarp equilaterally triangular in cross-section with each of the three surfaces obovate to elliptic, *c.* 2.4 x 1.4 mm, brown, coriaceous, very minutely reticulate-pitted. *Seed c.* 1.7 x 1 mm, medium orange-brown with a darkened base; aril 3-lobed, clear-translucent. (Figure 1)

Other specimens examined. WESTERN AUSTRALIA [precise locality withheld]: Narrogin area, 29 Aug. 1997, *G.J. Keighery & N. Gibson* 2088; Narrogin area, 15 July 1999, *L.W. Sage*1541 & 1542, *J.P. Pigott & E.B. Pigott.*

Distribution. Occurs in the Narrogin area in the South West Botanical Province of Western Australia.

Habitat. Recorded in red-brown gravelly sandy soil on a lateritic ridge, in a low heath vegetation including *Melaleuca pungens*, a number of members of the Proteaceae such as *Dryandra armata*, and two *Allocasuarina* species.

Phenology. Flowers and young fruits recorded in July, and mature fruits in late August.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority Two. Known from a single small population, located on a nature reserve. When surveyed in December 1999, the population comprised 28 plants (Kim Kershaw pers. comm.). Searches in nearby areas of bushland failed to locate any further populations of the species (Leigh Sage pers. comm.).

Etymology. From the Greek *mono* – one, and *sperma* – seed, referring to the 1-seeded fruit.

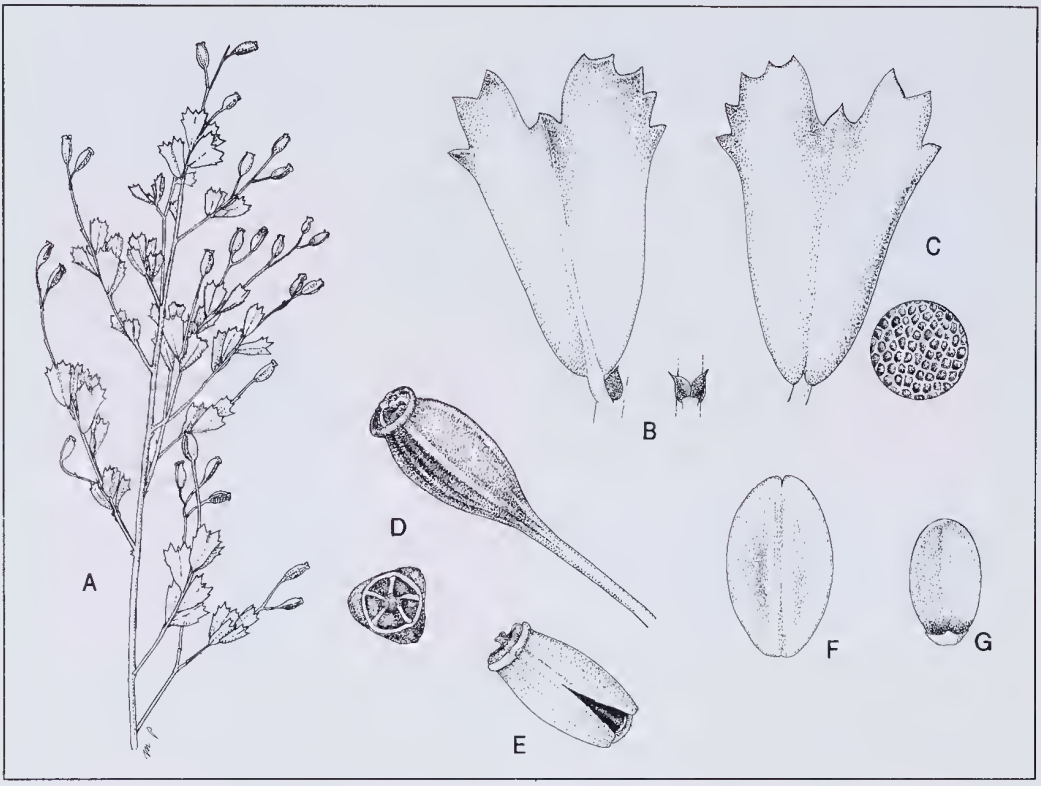

Figure 1. *Trymalium monospermum.* A – fruiting branch (x1), B – stipules and undersurface of leaf (x6); C – upper surface of leaf (x6) with enlargement of reticulate pitting; D – top and side view of fruit (monocarp enclosed in floral tube) and pedicel (x8); E – floral tube splitting at base to reveal monocarp (x8), F – monocarp (x10), G – seed with basal aril (x10). Drawn from *G.J. Keighery & N. Gibson* 2088.

Notes. Its closest relative appears to be *Trymalium urceolare* (F. Muell.) Diels, which is similar in having conduplicate leaves, completely glabrous flowers, the floral tube constricted near the summit and a completely inferior fruit.

Trymalium monospermum is a very distinctive species, apparently the smallest member of its genus and the only one to be completely glabrous, and is readily identified by its more or less obcordate to obtriangular leaves with two large tooth-like or prominently denticulate lobes. Also unique to this species are the flattened stigma and 1-celled trigonous fruit with a solitary seed. Although *T. monospermum* has a 3-celled ovary with an apparently fertile ovule in each cell, only one cell develops into a monocarp, the two aborted cells not even being visible in the mature fruit.

All other species of *Trymalium* have a terete fruit with more than one monocarp. Apart from *T. floribundum* Steud. subsp. *floribundum*, they all have a stigma with three long lobes, and three unequally 3-faced monocarps. Each monocarp has a rounded outer surface, which is larger than the two flatter inner surfaces, and the inner surfaces are more prominently patterned than the outer surface. In *T. floribundum* subsp. *floribundum* the ovary is 2-celled, the stigma 2-lobed and each monocarp has a rounded outer surface and flatter, more prominently patterned inner surface. A logical expectation for a 1-celled fruit in *Trymalium* would be for it to have a single rounded surface, i.e. to be terete, since the solitary monocarp has no internal surfaces adjacent to other monocarps. Instead the monocarp of *Trymalium monospermum* is trigonous, with three surfaces of uniform shape, size and patterning.

Acknowledgements

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